Erosion – ‘Soil and Soul’
(Tom E. Schumacher, Feb. 1, 2018, Ag Heritage Museum, South Dakota State University)

The life and times of Professor Hutton, his interactions with the world of soil science, and past and contemporary ideas of soil and erosion.

Cast of Characters: Blue & Yellow borders signify an SDSU connection (faculty and/or student)

Principal Characters:

Joseph Gladden Hutton: (1873-1939). SDSU Faculty Member, 1911-1939. An avid learner, educator, scientist, philosopher, and poet, he was a leader in the inventory of soils, soil conservation, soil fertility, and permanent agriculture in the state of South Dakota. The Groundbreakers exhibit (Ag Heritage Museum) provides details of his life and accomplishments.


Cyril George Hopkins: (1866-1919). Boyhood spent in Estelline, SD. 1890 graduate of SDSU. SDSU faculty member 1890-1892 (Agricultural Chemistry) and 1893-1894 (Pharmacy). Head of the Agronomy Department, Vice Director of the Experiment Station at the University of Illinois, and head of the Illinois soil survey. He was the principal advocate of Permanent Agriculture at the beginning of the 20th Century. He strongly influenced the philosophies and studies of both A.N. Hume and J.G. Hutton.
“What is soil?” was and still is not a trivial question.

During Professor Hutton’s education and career there was a tug of war with the study and understanding of soil between geologists, agricultural chemists, agronomists, and pedologists (those who believed that soil is a natural independent body deserving study on its own).

Vasail V. Dokuchaev – Father of Soil Science, first wrote about the five soil forming factors (Parent Material, Climate, Topography, Organisms, Time) in 1883.

Russian concepts of soil and similar ideas developed by Eugene W. Hilgard (a soil scientist at Berkeley) were ignored in the US until the late 1920s.

The Director of the US Soil Survey Division, Curtis F. Marbut, attributed a change in his understanding of soil (geological to pedological) in the 1920s to the influence of C.G. Hopkins, E.W. Hilgard, and translations of Russian soil science literature.

Soil is composed of a complex structured and interrelated mixture of air, water, mineral solids, organic solids, and living organisms. Each soil component is also composed of very complex interconnected entities. The highly interrelated and complex nature of soil makes it difficult to research and understand.

The structure of pores in the soil is especially important for the livelihood of biological organisms. Many soil organisms influence the formation and stability of soil structure (pore structure).

Natural functioning soils have stratified layers called horizons that are formed in their development.

The role of a soil in a landscape, its productive capacity, its response to erosion processes, and its ability to provide ecosystem services require an understanding of the complete soil and not just its surface.

“I trust that we may not forget that the soil is also beautiful ....” – J.G. Hutton, Jan 9, 1929, (Radio), Soil Talk No.3

-Painting composed using South Dakota soils – John Rychtarik (retired arts exhibit coordinator, SD Art Museum), (South Dakota Artists Alliance Website)